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[54]	SYSTEM FOR DATA TRANSFER THROUGH AN I/O DEVICE USING A MEMORY ACCESS CONTROLLER WHICH RECEIVES AND STORES INDICATION OF A DATA STATUS
	SIGNAL

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[63] Continuation-in-part of application No. 08/436,969, May 8, 1995, abandoned.

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[56]

[22]

References Cited

U.S. PATENT DOCUMENTS

4.680.755	7/1987	Reames 370/451
4.700.358	10/1987	Duncanson et al 375/222
4.757,446	7/1988	Trottier et al 395/200.62

4,942,515	7/1990	Marzucco et al 395/842
4,989,113	1/1991	Hull, Jr. et al 395/842
5,136,580	8/1992	Videlock et al 370/403
5,247,517	9/1993	Ross et al 370/452
5,247,626	9/1993	Firoozmand 395/200.42
5,361,372	11/1994	Rege et al 395/200.64
5,379,381	1/1995	Lamb 395/826
5,400,326	3/1995	Smith 370/401
5,434,872	7/1995	Petersen et al 371/57.1
5,457,681	10/1995	Gaddis et al 370/402
5,488,724	1/1996	Firoozmand 395/200.64
5,513,320	4/1996	Young et al 395/200.66
5,528,587	6/1996	Galand et al 370/412
5,537,413	7/1996	Yang et al 370/456
5,568,608	10/1996	Shannon 395/183.2
5,611,046	3/1997	Russell et al 395/115
5,612,742	3/1997	Krause et al 348/385
5,625,842	4/1997	Dalrymple 395/842
5,696,989	12/1997	Miura et al 395/844
5,720,770	2/1998	Nappholz et al 607/30
5.732.094	3/1998	Petersen et al 371/57.1

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ABSTRACT

[57]

A method and system for transferring units of data between a computer memory and an external system in which a DMA controller stores and uses information from an I/O device interfacing with the external system to transfer data more efficiently.

10 Claims, 7 Drawing Sheets

